Department of Codes & Building Safety

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# Metro Codes

E—News For Professionals

Metropolitan Government of Nashville and Davidson County

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## Reducing Waste:
## Key To Cost Effective Construction

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# Reducing Waste:

*Key To Cost Effective Construction*

By Tiffany Wilmont

Tiffany Wilmot
President, Wilmot, Inc.

Reducing waste is the key to managing construction and demolition (C&D) debris and the most effective way to save money on the job site, according to Tiffany Wilmot, president of Wilmot Inc., a sustainability and green building firm in Nashville.

Lack of landfill space has long been cited as the impetus behind recycling but the main problem is finding ways to conserve "embodied energy," or the amount of energy that goes into creating a product, says Wilmot, a LEED Accredited Professional and licensed building contractor. She sits on the Mayor's Green Ribbon Committee and Board of Directors for Kilowatt Ours.

For construction, Wilmot gives drywall as a prime example of a material that can make a cost-differential. Wilmot says that on average 25 percent of drywall is wasted.

"That means for every four truckloads of drywall that come into a project, one of them leaves as trash," she said. "Right now everything goes into the dumpster. What we try to do is spec it out better before the project even begins so that, for example, if we have a 10-foot ceiling, we try to get 10-foot drywall instead of 12-foot and we encourage the subs to reuse pieces."

**"Every year we create 136 million tons of debris in the United States just from construction demolition alone," If you used that to make a wall around the United States, it would be 30 feet wide and 30 feet high and 5,000 feet long."**

**Tiffany Wilmot,**
**President of Wilmot, Inc.**

The drywall waste is pulverized and either sold or given to farmers for use as a soil amendment. Drywall is made of gypsum, which is similar to lime. While it's not a fertilizer, it does act as a soil amendment. The paper in the drywall acts as a bulking agent, helping to aerate the soil and hold moisture, Wilmot said.

Recycling efforts are usually focused on the home but that's a small amount of waste – about 5 percent overall -- compared with the amount of trash produced in construction, commercial use and industry.

"Every year we create 136 million tons of debris in the United States just from construction demolition alone," Wilmot said. "If you used that to make a wall around the United States, it would be 30 feet wide and 30 feet high and 5,000 feet long."

What makes those numbers even more staggering is the fact that with proper management, 97 percent of construction waste is reusable or recyclable, she said, but only about 25 percent is currently recycled. "That differential is our opportunity," Wilmot said.

"Our company can easily supervise the on-site recycling of 50 percent of waste. With guidance and planning, 75 percent is achievable. We've even made 95 percent on some sites, but it's all in the planning," Wilmot said. "When you start focusing on it and you start thinking about it and managing it, you can always cut cost."

Wilmot points out that if even one dumpster pull per week could be eliminated by reducing, reusing and recycling, that would be the equivalent of one worker's salary.

Wilmot Inc., which has been committed to connecting environmentally responsible business practices with increased profitability for clients since 1994, provided the following list of recyclable construction items:

- Rock products (rock, brick, concrete, block, and asphalt)
- Drywall
- Metal (ferrous and non-ferrous)
- Wood (treated and untreated)
- Ceiling tiles
- Carpet
- Windows
- Plastic
- Glass
- Salvage materials (doors, hardware, fixtures, windows, stair railings)
- Roofing
- Cardboard and paper

"Some things we recycle and pay to get rid of them, sometimes it's just even, some of them we actually make money on such as cardboard, paper, metal, rock and salvaged materials," Wilmot said.

If equipment is available, rock products can be crushed on site and easily reused in backfill, for example. Excess poured concrete, instead of returned and dumped, could be crushed and used in creative ways, such as for a temporary road.

Demolition and construction have different variables. Wilmot estimates that in demolition, about 70 percent of waste comes from rock product, such as rubble, 15 percent from wood, 10 percent from other sources such as plumbing fixtures, cable and mechanicals, and 5 percent from metal

In construction, it depends on the type of building, but in general, about 35 percent is rock rubble, 20 percent is gypsum, 10 percent is metal and cardboard and the rest is mixed debris

The first step in any demolition or construction job is to write specifications that call for sub-contractors to reduce what they buy and recycle what they can't reduce.

"While we are there on site, we also train the contractors and subs so that they know how to do this in the future," Wilmot said.

There are countless small ways to save money and reduce waste. One is simply packing the dumpster tighter. "When we go

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on site we find that people think they are doing this but often they're not. They mean to do it and they want to do it, but frequently it ends up being pulled before it's packed tightly," Wilmot said.

Even what you have for lunch on site makes an impact.

"For every bottle of Coke we drink, it takes about 250 bottles of water to make it. People look at the Coke and think about recycling the bottle, but think about what went into making the Coke. There were transportation costs, the cost of the water to grow the sugar, of moving the water, and distilling the ingredients," Wilmot said.

Does that make you thirstier for a sip of tap water in a reusable mug?

"Embodied energy is the crisis," Wilmot said. "The landfill is not the crisis. We take the material out of the earth and then we convert it into a product, use it and throw it away. The best way to reduce it is not even to need that thing in the first place. That's why reduction is always at the top of the pyramid."

### About Wilmot, Inc.

This article was prepared by Tiffany Wilmont.

Based in Nashville, Wilmot, Inc. is a certified woman-owned business. The agency provides consulting services that allowed companies in both the public and private sectors to realize significant increases in profitability and productivity through the implementation of sound environmentally responsible business practices.

Wilmot recycled material for the Titans football stadium, which was the largest recycling project of its kind in the nation. It resulted in a whopping half a million dollars in savings for the city of Nashville. The company has been involved in other high-profile construction projects such as the retrofit of Vice President Al Gore's Nashville residence to operate more efficiently. The team headed up the waste reduction as well as attaining the ultimate green seal of approval: LEED certification.

**If you would like to submit an article for our Professional newsletter, please send articles and any artwork to billy.fields@nashville.gov.**

## Energy efficiency efforts on display at MDHA's "green reopening"

A New geothermal heating and cooling system was just one of the energy-efficient innovations on display when the Metropolitan Development and Housing Agency hosted a "green reopening" at Parkway Terrace Apartments on Thursday, July 23.

Attending the grand opening are, from left to right, Phil Ryan, Director of MDHA, and Ann Davis with her husband, Mayor Karl Dean.

As residents move into Parkway Terrace, the most significant improvement is one that's not even visible. The geothermal energy system, the first of its kind in Tennessee community-owned housing, utilizes the ground as a thermal energy source to generate heating and cooling. A consistent temperature is maintained inside the apartments, allowing the electrical system in place to operate more efficiently to heat and cool the units. It's estimated the geothermal system will reduce heating and water heating costs by 70 percent, and cooling costs by 30 percent.

"MDHA's property management group has systematically pursued energy and water conservation since 1997," said MDHA Executive Director Phil Ryan. "We are now taking it to a new level with geothermal, solar, VRV, lighting and water conservation technologies. Our customers save money and it's good for our beautiful Middle Tennessee."

MDHA is implementing energy-saving strategies system-wide, with a particular emphasis on its high-rise properties for the elderly and disabled. Water conservation measures, including new fixtures, commodes, shower heads, faucets and aerators, are expected to result in 50 percent less consumption. Heating and cooling upgrades in the high rises European-style variable refrigerant volume (VRV) heat pump systems that utilize outside air to control indoor temperature. Photo-voltaic solar panels will be installed on two high rises, ultimately generating 160,000-200,000 kilowatt hours of energy annually — enough to power 12 or 13 typical households in a

**Terry Cobb** and **Wade Hill** welcome your feedback on our e-newsletter. Please send your comments to Wade Hill, at wade.hill@nashville.gov Plans Examination Chief , 862-6520

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Pass the word about our newsletter! We would be honored if you would share our newsletter with your colleagues and co-workers. If anyone would like to sign up to receive it themselves, they just need to send us their email, and we will be happy to "Pass It On" to them.

## Text Changes Approved For Cell Towers

The Metropolitan Council has broaden the amount of information which must be submitted for a permit for a new cellular tower.

This zoning text amendment rewrites the conditions applicable to cellular telephone towers. The Metropolitan Code of Laws allows cell towers as a use permitted with conditions in all zoning districts. In order to obtain a permit to build a cell tower, the applicant has to demonstrate that existing towers in the area cannot accommodate the new equipment, meets setback and height restrictions, and install a landscaping buffer yard. Further, the district councilmember is allowed the opportunity to hold a community meeting on the tower when the tower was proposed to be in or near a residential zoning district.

The new ordinance, modeled after Chattanooga's cellular tower ordinance, in addition to broadening the required information, would further specify certain conditions regarding setbacks, landscaping, and site plans.

First, the Metro Code now requires the applicant to provide the following information at the time of application for the final site plan or building permit:

- A schematic site plan and landscaping plan.
- Identification of the intended users of the tower.
- A statement justifying the location that considers alternatives to the proposed site and describes why no existing facilities in the coverage area are available. A map of the coverage area identifying all service providers must be submitted. The applicant must show that the tower will have minimum visual impact upon adjacent residential properties.
- Documentation of the number of users that can be accommodated by the new tower.
- Proof of an enforceable bond or letter of credit to ensure the removal of the tower when it ceases to be used for a year.

Second, the ordinance sets forth some specific landscaping requirements. The code currently requires cell towers to have an "A" buffer yard. This ordinance would require all tower pads that are not screened with existing structures or natural vegetation to have a 10-foot buffer yard. The ordinance includes specific recommended species of vegetation for the buffer yard, and the property owner will be responsible for maintaining the landscaping. No screening will be required if the base of the tower is not visible from an adjoining property or right-of-way.

Third, the ordinance includes some specific requirements for new towers to facilitate future co-location. A new tower between 100 and 200 feet tall would be required to accommodate three additional personal communication system applications and three additional single antenna applications (i.e., 911, two-way radio, and emergency communication applications). Towers would be required to accommodate an additional personal communication system application and single antenna application for each additional 50 feet above 200 feet tall.

Fourth, the towers would be required to be setback the distance equal to the height of the "lowest engineered failure point", but not less than 50 feet from adjacent property lines. The height requirements would be set by the district bulk tables in the zoning code.

Finally, any tower that ceases to be used for twelve months would be considered abandoned, and the owner would be responsible for taking the tower down.

## Registration Now Open for 2009 National Preservation Conference

The National Trust for Historic Preservation will hold its annual conference in Nashville, October 13-17. This year's theme is *Sustaining the Future in Harmony with our Pasts*.

To view the preliminary program, read blog entries from National Trust staff members, and register for the conference, please visit "Conference Central" on the National Trust website: 2009 National Preservation Conference.

The National Preservation Conference, the premier preservation conference for professionals, community leaders, and volunteers working to save America's historic places and to revitalize their communities.

With approximately 100 educational and field sessions, special lectures, and networking opportunities, it is an excellent source for information, ideas, and inspiration about preservation in our nation.

The National Trust for Historic Preservation, sponsor of this conference, provides leadership, education, advocacy, and resources to save America's diverse historic places and revitalize our communities.

## Windmills Now Possible In Davidson County

With the passage of a new ordinance, small wind energy facilities (windmills) may become a part of the landscape in Davidson County.

According to the definitions in the ordinance, small wind energy systems are equipment used to convert or transfer wind energy into electricity. Previously, the Metro zoning code did not allow small wind energy systems as a permitted use. Now, the Code allows small wind energy facilities as a use permitted with conditions in all zoning districts.

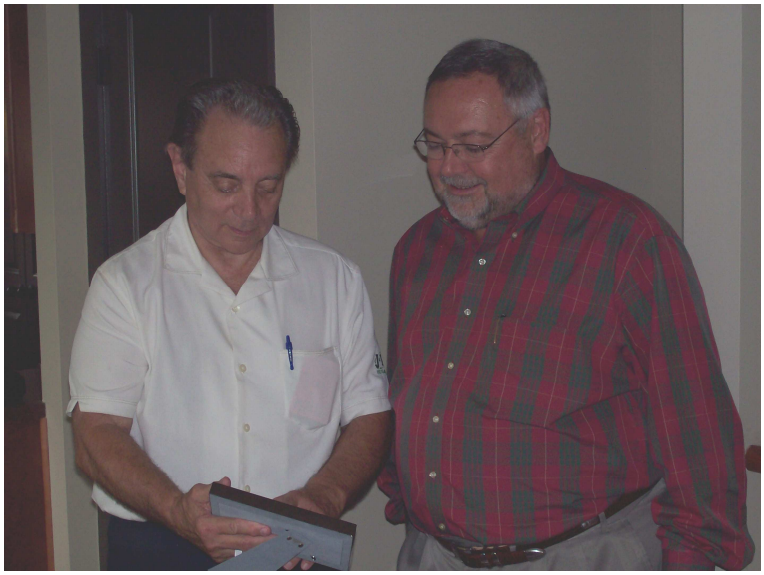
Small wind energy facilities are defined as those consisting of one tower and turbine, and having a rated capacity of not more than 100 kilowatts. Facilities with two or more towers and turbines that produce more than 100 kilowatts would be considered large wind energy facilities. The large facilities would only be permitted as part of a specific plan (SP) district adopted by the council.

Some of the conditions include: :

- The maximum height of the facility would be 15 feet above the maximum building height allowed under the base zoning district.
- The facility must be setback the greater of one and one-half times the height of the tower from the nearest property line or a distance equal to the height of the facility from any occupied buildings.
- No guy wires or anchors could be closer than five feet from the property line.
- An information sign identifying the owner of the facility and a contact phone number must be placed on the facility.
- No lighting of the facility will be permitted.
- The facility cannot generate noise in excess of 60 decibels measured from the closest occupied building. Nashville Electric Service must approve the site plan before the facility can operate.
- The applicant must provide a removal bond or other form of financial security to ensure that the facility will be removed when it ceases to be used for a year.

In addition to the above conditions, the ordinance requires someone desiring to install a windmill to submit a very detailed site plan prepared by a licensed engineer.

The site plan must include 12 specific requirements contained in the ordinance. These include identification of all existing buildings on site and within 600 feet of the site's boundary; the location of the proposed tower and associated infrastructure; existing tree cover; the location of other windmills within 2,000 feet of the proposed location; proposed landscaping changes; tower foundation blueprints signed by a licensed engineer; a statement from a licensed engineer that the wind turbine will meet the noise standards in this ordinance; an electrical diagram; documentation regarding the manufacturer of the facility; color photos showing how the facility will look when completed; and an operation and maintenance plan.



## J2K Builders Hosts Open House for Nashville's First "Green" Permitted Home

J2K Builders held an open house in Nashville's first "Green" permitted home. J2K's Jim McLean, shows Codes & Building Safety Director, Terry Cobb one of the many green features of the home.

# Why We Train

## *Codes Inspectors Receive Training Update on Accessibility Standards*

Tennessee requires that all codes inspectors and plans examiners, employed in the state, be tested and certified to demonstrate their knowledge of and proficiency in the building, plumbing, electrical, mechanical and fire prevention codes. Through this testing and certification, codes personnel also qualify for inspector licensing by the State Fire Marshal's Office.

The reason for the testing, certification and licensing requirements is to establish a uniform minimum requirement designed to increase the level of competency and reliability for code enforcement personnel who are protecting the public safety, health, and welfare. Codes inspectors are required to be certified in specific area they are employed.

In addition, they are also required to attend a minimum number of continuing education classes each year in order to maintain their certifications and licenses.

Director of Codes, Terry Cobb, said "training is a part of the everyday life for employees of the Department of Codes & Building Safety and is a critical part of service delivery to our citizens and customers". According to Cobb, Metro Codes Inspectors are required to have more certifications and are provided more continuing education hours than the state-required minimums. "In order to provide a quality service, we have to train regularly and at a high level," said Cobb.

Cobb said that the certifications, in his opinion, are simply, "banners of credibility", adding that "through training, testing and certification, the department achieves independent verification of the proficiency of its personnel. This independent verification proves what we believe to be true…we have a very knowledgeable and professional staff working for the citizens of this community."

Terry Cobb, Director of Codes, addresses the inspection staff at their most recent training session covering the International Building Code's accessibility requirements and the American National Standards Institute (ANSI) A117.1 standards.

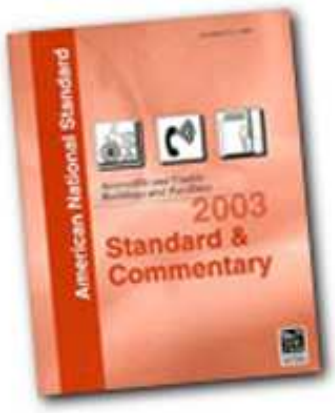
Most recently, Metro Codes Department inspectors spent time training on the International Building Code's accessibility requirements and the American National Standards Institute (ANSI) A117.1 Standard on Accessible and Usable Buildings and Facilities as well as related federal laws including the Americans with Disabilities Act Accessibility Guidelines (ADAAG).

## ANSI 117.1 Resource

### ICC / ANSI A117.1-2003 Standards and Commentary

*Codes and Commentary That Fully Explain The Specifications that Make Sites, Facilities, Buildings and Elements Accessible to the Disabled*

This publication contains the complete text of the ICC/ANSI A117.1-2003 Standard for Accessible and Usable Buildings and Facilities accompanied by corresponding commentary. This tool will help users of the standard understand its application and intent. The specifications in this standard make sites, facilities, buildings and elements accessible to and usable by people with such physical disabilities as the inability to walk, difficulty walking, reliance on walking aids, blindness and visual impairment, deafness and hearing impairment, incoordination, reaching and manipulation disabilities, lack of stamina, difficulty interpreting and reacting to sensory information, and extremes of physical size.



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## Save The Date—Codes Teeing It Up For Charity On Oct. 17

The 13th annual Metro Codes Charity Golf Tournament is set for Saturday morning, October 17th, at the Ted Rhodes Golf Course.

According to Terry Cobb, Director of Codes and Building Safety, the tournament format is a 4-man scramble (best ball), with foursomes established by "luck of the draw".

All net proceeds will be donated through the Metro Employees Consolidated Charities Campaign (MECCC) to the Easter Seals Camps for Physically Challenged Youth, Miriam's Promise and the Harris-Hillman School.

"Last year, with the help of more than 100 sponsors, the Metro Codes Department donated more than $28,000 to local charities," Cobb said. "We always have a great time."

The individual entry fee is $60 per player which includes greens fees, cart, lunch, beverages and door prizes. Sponsorship opportunities range from individual hole sponsors to a beverage cart sponsor or the Platinum Exclusive Hole Sponsorship.

This year, the tournament will benefit the Easter Seals Camp, Miriam's Promise and Harris-Hillman School through the Metro Employees Consolidated Charities Campaign. For more information on how to enter a team or become a sponsor, contact Rick Shepherd at 351-9993 or Jim Winchester at 262-2999.

**Ted Rhodes Golf Course**